Microsoft Exchange Server

Chapter 1
Overview of the Exchange 2000 Migration Planning Process

Planning Guide

Abstract

This chapter provides both an overview for planning a migration from Exchange 5.5 to Exchange 2000 and a framework for the remainder of the chapters in the Architectural Guide. It steps through the various elements of the migration planning process, from the changes required to your architecture to the development of new administrative routines. By the end of this chapter, you will be able to judge whether migration is a viable option for your organization and assess the business benefits of this course of action.

This is a preview edition of the Microsoft Exchange 2000 Server Upgrade Series. The final documentation will be available in November 2000.

© 2000 Microsoft Corporation. All rights reserved. THIS IS PRELIMINARY DOCUMENTATION. The information contained in this document represents the current view of Microsoft Corporation on the issues discussed as of the date of publication. Because Microsoft must respond to changing market conditions, it should not be interpreted to be a commitment on the part of Microsoft, and Microsoft cannot guarantee the accuracy of any information presented after the date of publication.

This document is for informational purposes only. MICROSOFT MAKES NO WARRANTIES, EXPRESS OR IMPLIED, IN THIS DOCUMENT.

Microsoft, Active Directory, Windows, Windows NT and the Windows logo are registered trademarks of Microsoft Corporation.

Other product or company names mentioned herein may be the trademarks of their respective owners.

Microsoft Corporation • One Microsoft Way • Redmond, WA 98052-6399 • USA

1000

CONTENTS

INTRODUCTION....1

CHAPTER OVERVIEW....2

DEFINING ORGANIZATIONAL TYPES....4
Definition of Acronyms 4
Main Company Types 4
Branch Office Types 4
Special Cases 4
Organization Type Descriptions 5
Large International Conglomerate 5
Large Multinational Organization 5
Large National Organization 5
Medium National Organization 6
Smaller National Corp. 6
Small Autonomous Organization 6
Single Location Organization 6
Branch Offices 7
Regional Branch Office 7
Large Branch Office 7
Medium Branch Office 7
Small Branch Office 7
Special Case Scenarios 8
Collaborating Organizations 8
Planning Expansion 8
Multiple Headquarters 8
Security Sensitive 8
Telecommuter Friendly 9
Outside Document Scope 9
SOHO Customers 9
ASP Hosted Customers 9
Mapping Organization Types to Administrative and Network Model 9

EXCHANGE 2000 BENEFITS....11
Integration with Active Directory 11
Administration 11
Messaging 11
Internet Connectivity and Web Support 12
Information Store Features and Scalability 12
Real-Time Communications 13
Custom Solution Development 13
Clustering 13
International Support 13

MIGRATION TO EXCHANGE 2000....15

What is Migration? 15
Why Migrate? 15
What are the Potential Issues? 15
Disruption to the Network 15
Cost 15
Is Migration for Me? 16

CONSOLIDATION....17
What is Consolidation? 17
Why Consolidate? 17
Reduced Cost 17
Increased Quality of Service 18
Reduced Complexity 18
Reduced Network Traffic 18
What are the Potential Issues? 18
The Network is fine as it is. 18
The risks are too high. 19
The cost of consolidation is too high. 19
Architectural Changes due to Consolidation 19
Is Consolidation for Me? 20
LIC Example 20
SLO Example 21
Consolidation and Migration 21

EXCHANGE 2000 IMPLEMENTATION PLAN....22
Creating a Methodology 22
Design Considerations 22
Resource Requirements 22
System Prerequisites 22
Related Topics 23

SUMMARY....24
More Information 24
Identify Detailed Exchange 2000 Architecture 25
Identify Exchange Server Types and Numbers 25

IDENTIFY COEXISTENCE STRATEGIES....27
Identify Interoperability Scenarios 27

CHAPTER 1 OVERVIEW

Exchange 5.5 is a stable, feature-rich, and popular messaging environment deployed within thousands of organizations throughout the world. A large segment of these organizations are looking to migrate to Exchange 2000, to take advantage of its many enhancements.

Exchange 2000 creates significant improvements in scalability, performance and security over Exchange 5.5. These improvements make the process of migrating to the new release attractive, in terms of total cost of ownership, reduced complexity, and increased functionality.

However, although Exchange 2000 brings many benefits and improvements in messaging technology for both large and small operations, a significant number of Exchange 5.5-based organizations may be unwilling to upgrade at present. This is particularly true of companies or public bodies that have spent significant amounts of time and money in designing their Exchange 5.5 architecture and topology. The current (Exchange 5.5) architecture works and stands up well to the demands of the users. These organizations now have the option of server consolidation, whereby three or four Exchange 5.5 servers are replaced by one Exchange 2000 server.

To assist you in identifying which course of action is applicable to your company or organization type, this chapter presents a table of different company types with examples of each sort. The road map will, in turn, relate which parts of this guide you need to read, depending on your organization type.

Note: The words organization, company and corporation are used interchangeably throughout this guide, but in all cases refer to any type of commercial, non-commercial, municipal or governmental grouping of people working together with a common messaging system.

This guide discusses the considerations inherent in designing and planning a migration or consolidation scenario; the deployment guide covers the practical details of the planned implementation. Future releases of this documentation will be expanded to cover the full architectural design, planning and deployment phases. This guide is designed to be practical and easy to use, including several tools to as templates to help you with your own planning process.

This guide consists of the following chapters, each of which takes you through a part of the consolidation process. Each chapter contains a discussion of the risks involved in consolidation, and procedures you can take to mitigate these risks.

Chapter 2 – Making the Decision to Migrate

This chapter presents some logical processes to help you identify the

features of Exchange 2000 that will have the most affect on your organization. These processes will help you review the various factors to consider when planning your migration. Understanding the existing architecture, technical benefits and considerations for the upgrade to Exchange 2000 will prepare you for the migration, whether that step takes place immediately or at a later date.

This chapter deals with

- Determining strategic objectives
- Exchange 2000 features and benefits
- Evaluating business requirements
- Defining costs

Chapter 3 – Evaluating System Dependencies and Technical Factors

This chapter helps you define the technical issues that will affect your deployment of Exchange 2000. Additionally, it outlines the requirements that Exchange 2000 places on the infrastructure. Having completed this chapter, you should be able to collect relevant information about your current environment that in conjunction with your business requirements will determine the preferred architecture for Exchange 2000 in your organization.

Evaluating system dependencies includes:

- Windows 2000 architecture
- Exchange 5.5 structure
- Hardware considerations

Chapter 4 – Connecting Active Directory to Exchange 5.5

Exchange 2000 requires Windows 2000 Active Directory to function. However, Exchange 5.5 maintains its own separate directory structure. Therefore, any migration plan must contain a connection between the Windows 2000 Active Directory and the Exchange 5.5 directory structures. This connection is provided by the Active Directory Connector (ADC), and this chapter covers the factors involved in planning and deploying the ADC.

The information includes:

- Planning synchronization between Windows 2000 and Exchange 5.5.
- Defining Connection Agreements.
- Extending the Active Directory schema.

DEFINING
ORGANIZATIONAL TYPES

The practical issues are covered in Deployment Chapter 3 – Synchronizing Active Directory with Exchange 5.5.

Chapter 5 – Creating the Migration Plan

Now that you have all the pieces together, Chapter 5 helps you consolidate them into your migration plan. This plan focuses on high-level and strategic issues and outlines the steps to plan a successful Exchange 2000 migration. After completing these steps, you should have a firm understanding of the requirements for planning a migration to the Microsoft Exchange 2000 messaging system.

This section includes

- Determining a migration strategy
- Building a migration plan
- Decommissioning retired messaging servers

This chapter also references the various practical tasks within the deployment section.

Chapter 6 – Implementing Administration and Maintenance Procedures

As you convert your servers from Exchange 5.5 to Exchange 2000, some changes will be required to the administrative and maintenance routines that you currently run on your Exchange 5.5 servers. Topics covered here include:

- Building your security and administrative models.
- Using new maintenance tools, such as Exchange System Manager
- Any new procedures resulting from using much larger Exchange 2000 servers

Now that we've reviewed the contents of the rest of this section, let's look at defining some organizational types.

To reduce the amount of information that you have to read, a system has been devised that should help you identify the areas that you need to cover. This classification system should apply to at least 80% of the organizations looking to implement Exchange 2000. This system looks at the number of employees, their distribution, the speed and type of the WAN links (if any), how the company is administered, supported, the overall organization and lines of communication.

Read through each company description provided below, identify which most closely matches your own organization, and note the acronym for

that company type. The roadmap below identifies which sections in this guide should be read for any particular type of organization. Each section also contains a marker, indicating the company type for which that section is applicable. In addition, case studies are supplied to the given company types.

Definition of Acronyms

The following table lists the company types and their respective acronyms:

Main Company Types	
LIC	Large International Conglomerate
GHQ	Global Headquarters
LMO	Large Multinational Organization
LNO	Large National Organization
MNO	Medium National Organization
SNO	Smaller National Organization
SAO	Small Autonomous Organization
SLO	Single Location Organization
Branch Office Types	
RBO	Regional Branch Office
LBO	Large Branch Office
MBO	Medium Branch Office
SBO	Small Branch Office
Special Cases	
CO	Collaborating Organization
PE	Planning Expansion
MH	Multiple Headquarters
SS	Security Sensitive
TF	Telecommuter Friendly

Organization Type Descriptions

This first list gives the main organization types. Note that organizations can have branch offices, both national and international. However, the main goal is for you to identify with a particular company type. If you do not fit any category and you are representative of a number of companies of a similar type, then please email support@technet.microsoft.com, giving some of background information

on your organization and we will attempt to include your organization type in the analysis.

Large International Conglomerate

Type One is a Large International Conglomerate (LIC) consisting of a geographically dispersed organization composed from the amalgamation (or de-merger) of several smaller but individually identifiable companies. Each company is administratively separate and maintains its own network of Regional Offices and Branch Offices throughout the world (whereas the Global Headquarters (GHQ) may be little more than a holding company). Type One usually has a total combined workforce in excess of 20,000, and each component company is connected to its own branch offices by a network of various WAN links, from ISDN dial-on-demand or X.25 to T1 with T3 or ATM links joining the companies' headquarters.

Examples include Andersen Consulting, Boeing, Chevron, National Australia Life, and Merrill Lynch.

Large Multinational Organization

Type Two is a Large Multinational Organization (LMO) consisting of a central organization with significant worldwide presence. The LMO can have a large headquarters with international regional offices and national branch offices. The LMO is administratively more centralized than the LIC, but the larger branch offices have their own dedicated IT staff. With a workforce of 10,000 and up, the regional and branch offices are connected to the headquarters by a network of various WAN links, from asynchronous dialup to T1 or possibly T3 links.

Examples include Microsoft Corporation and Compaq.

Large National Organization

Type Three is a Large National Organization (LNO) consisting of a central headquarters with a network of branch offices throughout a country but without any significant overseas presence. The company consists of a headquarters with a network of small, medium-size and large branch offices, with possibly a couple of larger regional offices. With a workforce of 5,000 or more, the various components of the company are connected via WAN links, ranging from Asynchronous dialup to T1.

An example is Lloyds TSB Bank (UK).

Medium National Organization

Type Four is a Medium-sized National Organization (MNO) that is structurally similar to the LNO and has a countrywide or regional operational scope. It has a network of small to medium sized branch offices. Administrative control is moderately to heavily centralized, in that the branch offices are not large enough to have any dedicated IT staff.

Typically with a workforce of 1,000 or more, the various components of the company are connected via WAN links, ranging from Asynchronous dialup to T1.

Examples could include local governments and large universities.

Smaller National Corp.
Type Five is a Smaller National Organization (SNO): a single country or regional company. Branch offices are likely to be small to medium size with no local IT staff. Headquarters provides administrative control and support of the branch offices.

Employee numbers could be from 500 upwards, with WAN links of up to 64 KBps leased-line, but more commonly dial-on-demand or dialup.

Small Autonomous Organization
Type Six is a Small Autonomous Organization (SAO) in a single location without any branch offices. Administrative control is completely centralized or outsourced. Employee numbers are 50 or more. WAN connectivity is limited to an Internet connection; that is ISDN dialup to T1, depending on the size of the company.

Note that apart from employee numbers, this company is identical to the Single Location (SL) example below. Hence, SLs and SCs are generally considered collectively, as the main difference between them will be the increased numbers of Exchange 2000 servers required to support the organization.

SAOs with less than 50 employees should consider implementing Exchange 2000 as part of Small Business Server (SBS). For more information see http://www.microsoft.com/sbserver/.

Single Location Organization
Type Seven is the Single Location Organization (SLO). Like the SC example above, all company resources are located in one geographic area. As all the employees work at one location, the only WAN links are likely to be to the Internet for SMTP mail, Newsgroups and Internet Client access. The company itself could be almost any size, from 50 – 10,000 employees. Staff levels will affect the number of Exchange servers needed.

Examples include Call Centers and Internet Start-ups.

Branch Offices

The following set of definitions cover the types of branch offices that relate to the above examples. Branch offices can range from a couple of people in a shed to the regional headquarters of a multinational company.

Regional Branch Office

Regional Branch Offices (RBOs) are typically either the national HQ of an LMO, or the headquarters of a subsidiary of an LIC. Regional offices might use localized versions of Exchange 2000 server and client software, and they are responsible for their own support and administration. RBOs might show a high degree of autonomy. Staffing numbers at RBOs typically range from 51-1,000. RBOs usually have leased line connections (up to T3 or ATM) to the global headquarters and the other RBOs. In addition, they may have their own networks of branch offices, with WAN links from asynchronous dialup to leased-line connections of 64 KBps or more. Each RBO can act as a hub within its own region, with a backbone connection to the headquarters and to the other RBOs.

An example of an RBO is Microsoft UK.

Large Branch Office

A Large Branch Office (LBO) usually consists of 20-50 staff with multiple Windows NT, Windows 2000 or other types of servers. An LBO can have a separate Exchange 2000 Server, although it is likely that the Exchange server will also be providing file and print, intranet or other network services. The LBO has WAN links to either the RBOs or to GHQ, typically ISDN, ADSL or leased line up to T1. However, LBOs would not normally have any branch offices below them; otherwise, they would be ROs. Some LBOs have a small local support or administrative IT staff.

Medium Branch Office

The Medium Branch Office (MBO) will typically consist of 5-19 staff, with one or two servers. The servers will carry out a number of roles, one of which will be Exchange 2000. Links to the GHQ or to an RO are via asynchronous dialup, ISDN, ADSL or Kilostream. MBOs are unlikely to have T1 links. Like LBOs, MBOs will be connected either to GHQ or to an RO.

Small Branch Office

The Small Branch Office (SMO) has one multi-role server or possibly no Exchange server at all, depending on its WAN link. With only two to four staff, the SBO is not normally a significant part of Exchange 2000 planning, but can introduce some complications for client access. WAN access is most likely to be via asynchronous dialup or possibly ISDN to GHQ or an RO.

Special Case Scenarios

The following section covers situations that can apply to any type of company listed in this guide. If any of these sections apply to you, read the main part from the company types above, and then read the areas covered for your options. Note that your organization can fit more than one special case: for example, telecommuter-friendly and security

sensitive.

Collaborating Organizations

Collaborating Organizations (CO) are created when two or more of the main company types above work together on the same project. Compatibility issues may arise between the two mail systems. If both are running Exchange 2000, then there will be at least two Active Directory forests. Administratively, the companies are totally separate and autonomous.

A variation of a CO environment is a Peer-to-Peer Network (PPN). With a PPN, several smaller companies work together without any overall controlling company. Again, the company size and type can be any of the main types defined above, but this arrangement is most commonly found between SLOs.

Planning Expansion

Companies that are merging or planning to take over other companies in the near future are referred to as Planning Expansion (PE). If this is a merger of equals, you can get the MH scenario below. If not, you usually end up with a GHQ and a new LBO or RBO. The main messaging issues here are coexistence, upgrading or migration, but if both are running Windows 2000 and Exchange 2000 then this scenario requires special attention to the process of integrating the Active Directories of the two companies. This includes considerations such as whether to continue as two distinct entities, with separate directory spaces and Exchange organizations, or to merge directory structures and administrative responsibilities.

Multiple Headquarters

Multiple Headquarters (MH) is what happens after a successful expansion, where a merger of two or more equal sized companies has resulted in separate entities within the new merged organization. Each body can have a large headquarters building and its own support resources, corporate identity and business procedures. Each can have different (and incompatible) mail systems, or can be running Exchange 2000 and Windows 2000 in separate forests.

An example is Lloyds-TSB (United Kingdom).

Security Sensitive

Security Sensitive companies (SS) want to guard what they send and thus need signing or sealing of communications. This can include encryption of message contents, verification of a sender’s identity or SSL security on Outlook Web Access for Extranet use. Key length is immaterial, so this information applies to companies in all countries.

Examples are companies engaged in high-value research and development such as the bio-tech industries.

MAPPING ORGANIZATION TYPES TO ADMINISTRATIVE AND NETWORK MODEL

Telecommuter Friendly

The Telecommuter Friendly (TF) company has a significant number of workers accessing information over RAS or dial-up networking from home or other locations. The company can be of any size and constitution, but will need support for asynchronous or ISDN Remote Access Service (RAS) or direct RAS connections over Asynchronous Digital Subscriber Line (ADSL) with Point to Point Tunneling Protocol (PPTP) or Layer 2 Tunneling Protocol (L2TP) tunneling and IP Security (IPSec) encryption. TF companies will also be interested in implementing Outlook Web Access, Post Office Protocol version 3 (POP3), Internet Message Access Protocol Version 4rev1 (IMAP4), and Network News Transfer Protocol (NNTP) client access, possibly using Front-End/Back-End server combinations.

TF companies are normally security sensitive as well.

Outside Document Scope

The following organization types are outside the scope of this document and are not covered. See the relevant references for more information.

SOHO Customers

Small offices with less than 50 users should consider using Small Business Server 2000 instead of Exchange 2000. For more information, see http://www.microsoft.com/sbserver/.

ASP Hosted Customers

Companies that use Application Service Providers (ASPs) will use the infrastructure provided by their service provider and do not need to carry out the analysis and deployment in this guide.

For more information about ASP hosting, see:

http://www.microsoft.com/exchange/techinfo/hosting.htm

Each organization type is now mapped to typical Exchange2000 administrative and networking infrastructure models. This is done from the perspective of the organization or sub-unit. For example, a GHQ will usually be self-administering with a centralized network. However, it could be a GHQ for a LIC, which itself has a distributed Network with distributed administration. Conversely, the MH example will generally have a distributed network (with one or more headquarters) that are self-administering.

	Centralized Network	**Distributed Network**

Centralized Administration	Global Headquarters Single Location Organization, Large Branch Office Medium Branch Office	Medium National Organization Smaller National Organization Small Autonomous Organization Regional Branch Office
Distributed Administration	Small Branch Office, Medium Branch Office	Large International Conglomerate Large Multinational Organization Large National Organization Multiple Headquarters

In later releases of this publication, these definitions will map to the Administrative Group and Routing Group features of Exchange 2000.

This mapping cannot be entirely prescriptive—there will be examples of companies that fit the profile of, say, LNO, and yet operate a centralized administrative model. The main idea is to give you a classification model and structure that you can then adapt to your own requirements.

Exchange 2000 brings a number of benefits over its predecessor that make it an attractive proposition for both migration and consolidation scenarios. These benefits can be categorized as follows:

- Integration with Active Directory
- Administration
- Messaging
- Internet connectivity and web support
- Information Store features and scalability
- Real-time communications
- Custom Solution Development.
- Clustering
- International support

It is assumed that you are reasonably familiar with the benefits of Exchange 2000, so the following section is intended only as an overview.

Integration with Active Directory

Exchange 2000 no longer supports its own directory service—it is fully

integrated with Active Directory. This gives the benefits of more centralized administration, greatly increased scalability, higher security, better security and improved search facilities.

Administration

Not only is Exchange 2000 integrated with Active Directory, it is managed using the same tools. MMC lets you create a management interface that contains the tools you need to carry out a specific role.

Administrative groups provide a more flexible management model that no longer ties administration to the Exchange 2000 site. With Exchange 2000 you can have multiple sites (now called routing groups) within one administrative group, giving greater flexibility in how you delegate roles and responsibilities within your organization.

Messaging

Improvements to the underlying messaging transport include the adoption of the *de facto* messaging standard of Simple Mail Transfer Protocol (SMTP). Not only is Exchange 2000 fully integrated with the SMTP service in Windows 2000, it adds significant additional functionality, such as advanced queuing, message tracking and intelligent routing.

The use of SMTP as a core protocol greatly increases interoperability with other Internet mail hosts. To help manage these connections, Exchange 2000 provides the ability to create SMTP virtual servers, each with different Internet Protocol (IP) addresses, port numbers or authentication settings.

For programmers, Exchange provides an event sink model, allowing predetermined responses that are triggered when particular actions take place. This makes it very easy to send disclaimers with outgoing mail, or to check for attachments on incoming messages.

Internet Connectivity and Web Support

Exchange 2000 is now fully integrated with Internet Information Server (IIS) within Windows 2000. This provides access to the Exchange Information Store using protocols such as HyperText Transfer Protocol, (HTTP), POP3, IMAPv4 and NNTP. HTTP access has been significantly enhanced with the addition of Web Distributed Authoring and Versioning (WebDAV), which can provide simple content publishing facilities that are accessible across the Internet.

Outlook Web Access (OWA) has been significantly enhanced with support for contact and appointment forms in public folders, drag and drop, rich text editing and right-click functionality. These improvements have made OWA a credible alternative to Outlook 2000.

Exchange 2000 has flexibility for configuring security options when connecting to the Internet. This provides greater confidence in the security of your messaging system and in the protection of your vital information.

Information Store Features and Scalability

Changes to the information store have vastly increased the number of users that you can host on one Exchange 2000 server. Whereas 2,000 users was the practical limitation on Exchange 5.5, Exchange 2000 can easily cope with 14,000 users per server. This increase in scalability has come about because of features within Exchange 2000 Enterprise Edition that allow the creation of multiple storage groups and multiple mailbox or public folder databases within each storage group.

Access methods now include use of the Web store, which makes the Exchange Information Store available as a drive letter. This means that you can link to messages using UNC paths or by URL. Your users can use the information store as though it was a network drive.

Indexing and search tools have been enhanced with full-text content indexing, making possible the retrieval of all stored messages, newsgroup postings, or documents containing a specific word.

Real-Time Communications

Real-time communications are now served through Instant Messaging and Chat services. Instant Messaging allows for presence monitoring, thus enabling business process communications that can perform intelligent task routing based on whether a particular individual is logged on.

The Chat service, originally introduced as an add-on to Exchange 5.5, is now fully integrated with Exchange 2000, offering better scalability, security and functionality.

Custom Solution Development

Exchange 2000 has an expanded list of programmatic options available for custom solution development. These include:

- Collaboration Data Objects (CDO), ActiveX and Object Linking and Embedding (OLE DB)
- Event sinks within the information store that trigger on particular actions
- SMTP and NNTP event sinks, for adding standard text to messages based on message destination or other factors.
- Custom forms for Outlook Web Access

Clustering

Windows 2000 Advanced Server and DataCenter Server provide increased reliability through two- and four-way Active/Active clustering. Exchange 2000 is fully cluster-aware, allowing you to deploy high-availability Exchange 2000 servers with the assurance of continued operation in the face of hardware failure. In addition, the Active/Active clustering means that all servers within a cluster are carrying out useful work, thus increasing hardware utilization.

International Support

International support covers the ability to have multi-lingual clients and administration. This is particularly useful to LIC and LIO bodies, as it allows administrators and users in an increasing number of countries to work with Exchange 2000 in their own language.

For more information on the business benefits of Exchange 2000, go to http://www.microsoft.com/exchange/productinfo/BizValue.htm.

For more information on the features of Exchange 2000, see http://www.microsoft.com/exchange/productinfo/FeaturesGuide.htm.

MIGRATION TO EXCHANGE 2000

For a management briefing, see http://microsoft.com/seminar/1033/20000518exchangeserverds1/seminar.htm.

Most organizations that have deployed Exchange 5.5 will at some point consider migrating to Exchange 2000. As the momentum to deploy Windows 2000 becomes more pronounced, it makes more sense for companies to move to the unified directory structure of Exchange 2000 as well.

What is Migration?

Migration is the wholesale upgrading of an Exchange 5.5 organization to Exchange 2000. This includes redesign of the architecture where necessary, with the goal being to convert the Exchange 2000 organization to native mode. Operating in native mode gives the maximum possible benefit from the new features in Exchange 2000.

Why Migrate?

Companies and public bodies usually have a number of reasons for migrating to Exchange 2000. Here are some of the major ones:

- Specific feature(s) in Exchange 2000
- Increased scalability or availability
- Upgrading to Windows 2000 and want to unify the directory structure
- Looking to implement Exchange Conference Server and want a single vendor solution.
- Server consolidation (covered in the next section)

What are the Potential Issues?

The two main issues with migrating from Exchange 5.5 are:

- Disruption to the network caused by technical problems during the upgrade
- Cost

Disruption to the Network

If you have spent a significant amount of money implementing your Exchange 5.5 architecture and everything is running fine, you may not be interested in ripping it all out and replacing it with Exchange 2000.

However, this means not being able to take advantage of the benefits of Exchange 2000.

Cost
Cost is an issue that should be viewed in the context of Total Cost of Ownership (TCO). Several cost benefits can accrue from implementing Exchange 2000; these are covered in the section on Consolidation.

Is Migration for Me?

If you are still undecided as to whether migration is a good idea in your particular circumstances, it might be appropriate to approach this by a process of elimination.

Migration is not for you if:

- You have no plans to upgrade to Windows 2000.
- You do not want to implement Active Directory.
- You have third-party connectors such as System Network Architecture Distributed Services (SNADS) that are not supported under Windows 2000 (although this is only a partial objection—all it means is that you will still need at least one Exchange 5.5 server).
- The risks associated with migration outweigh the benefits.

If you're still with us at this point, then there is a good chance that migration is a possibility. The following paragraphs describe cases in which migration could be beneficial.

SNO Example
Contoso, Ltd. are bulk manufacturers of specialty etching chemicals for the glassware industry. They have one main manufacturing location, which is also the company headquarters, with four MBOs and a number of SBOs throughout North America. The company currently uses Exchange 5.5 and has developed a forms-based ordering and expediting system to manage the shipping and handling of the chemicals. However, at present there is no integration between the mobile sales teams and the ordering system. The intention is to use a browser-based interface into which the sales team can enter new orders directly, thus speeding up the delivery process and demonstrating a commitment to prompt order fulfillment.

In this case, support for HTML-based forms in Exchange 2000 that can be accessed using a web browser, a laptop and a cell phone, combined with the programmatic support for event sinks, provide an elegant and effective solution to rapid order processing.

TF Example
ProseWare Corporation is an agency for secretarial resources that

CONSOLIDATION

operates in the Bay area of San Francisco. It provides typing support, transcription, and translation services to companies throughout the West Coast of the United States. They have a large number of outworkers who dial in via RAS and collect audio files which they then transcribe and e-mail back to the company. They would like to be able to collect assignments via the company's secure web site.

The support for streaming media files and the web storage system in Exchange 2000 make this extremely easy to implement, particularly using the security enhancements of front-end/back-end server configurations.

Organizations that have a significant investment in Exchange 5.5 architecture and that cannot migrate at this time can use consolidation as a stepping-stone to a full native-mode Exchange 2000 deployment without the added complications of a full architectural redesign. This section looks at the consolidation process.

What is Consolidation?

Server consolidation is the process of replacing two or three Exchange 5.5 servers with one larger Exchange 2000 server. Consolidation comes in two flavors: *heterogeneous* and *homogenous*.

Heterogeneous consolidation is achieved by taking two or more unlike services (for example, Exchange and SQL) running on separate machines, and combining them together on one server. This scenario is not described in detail in this chapter.

Homogenous consolidation is taking the same service from two or more servers and combining them onto one server.

Due to possible software and .DLL conflicts between the disparate applications, the risk factors inherent with heterogeneous consolidation are usually higher than with homogenous consolidation. However, risks associated with homogenous consolidation should be balanced against the benefits.

The consolidation scenario used in this guide is the consolidation of two or more Exchange 5.x servers into one Exchange 2000 server: This scenario is subject to the following constraints:

- The consolidated servers are all in one site
- No (or only minor) architectural or topological changes are anticipated to incorporate the consolidation procedure.

Why Consolidate?

The main motivating factors behind consolidation are:

- Reduced cost
- Increased Quality of Service (QoS)
- Reduced complexity
- Reduced network traffic

Reduced Cost

Cost is defined here as the TCO rather than the lesser overall cost of buying the hardware. For example, if you have several servers, possibly spread over a number of locations, then it is more expensive to apply, for example, a service pack to each of those servers rather than to one central server. Likewise, application installations are more costly on multiple distributed machines.

The administrative cost of applying configuration changes within Exchange does not feature in this argument, as generally it is as easy to configure a site with five servers as it is to configure a site with one. Although individual server configuration settings are changed one at a time, the overall effect on costs is negligible.

Increased Reliability

Reliability issues can be more of a swings and roundabouts issue. While it is easier to maintain and administer a single server than a distributed array, if that one server goes down this affects a greater proportion of your enterprise. So you need to take extra precautions to ensure the stability and reliability of your consolidated server, possibly by adding clustering support, RAID storage or more frequent backup routines, which will in turn affect the TCO figures. On the plus side for consolidation, remember that with five servers, you are five times as likely to have a single server failure than with one.

Reduced Complexity

Consolidating the work of three or four servers onto one server reduces the complexity of the network.

Reduced Network Traffic

Exchange 5.5 servers within a site all use Remote Procedure Calls (RPC) communication for both messaging via the Message Transfer Agent (MTA) and Directory Service (DS) replication. As the definition of a site includes a permanent, high-bandwidth connection, all machines in the same site expect to be able to connect immediately to any other server in the site. Message routing is direct to the recipient server with no intermediate hops or bridgehead topology.

The definition of a site implies that bandwidth availability is not an issue. Each server in an Exchange 5.5 site typically requires 56Kbs; hence, ten

Exchange 5.5 servers contribute about 500Kbs of background traffic in normal operation. Note that this does not allow for public folder replication or high inter-server messaging volumes.

Consolidating Exchange 5.5 servers into fewer Exchange 2000 machines reduces overall data traffic levels, thus freeing up bandwidth for other network activities.

What are the Potential Issues?

Issues that may detract from the case for consolidation range from the “if it ain’t broke, don’t fix it” school of argument, to the impact of changes to a network such as additional networking components (such as Windows 2000 Active Directory).

The Network is fine as it is.

Analyze how much it costs to maintain two, three or more servers against how much it costs to maintain just one. Remember to include (where appropriate) any travel time and the increased duration of a maintenance procedure that has to be executed on numerous servers.

The risks are too high.

One way to significantly reduce the risk from the consolidation process is to run a pilot that can then be migrated to production. See Deployment Chapter 12 for the details of this process.

The cost of consolidation is too high.

It is important to make sure you are including all costs on both sides of the balance sheet. The following table shows some of the financial factors that apply.

Item	Debit	Credit
Staff hours	Time to plan and implement consolidation procedure	Reduction in maintenance hours Reduction in support of multiple servers
Server Hardware	Cost of purchasing large new server for Exchange 2000	Re-tasking of existing Exchange 5.5 servers to other roles thus reducing hardware purchases elsewhere
Software	Copy of Exchange 2000 Enterprise Edition and Windows 2000 required	Consolidated servers are cheaper to license because there fewer of them are required.
Network Complexity		Complexity and points of failure on network are reduced, leading to savings over lifetime of server

Network Traffic		Reduction in network traffic may stave off requirement to upgrade network infrastructure

Architectural Changes due to Consolidation

Architectural changes in the Exchange infrastructure due to consolidation are usually fairly limited—after all, the aim of consolidation is simply to replace a number of servers on one site with one machine. However, architectural changes within the network do need to be considered. These are:

- Introduction of Windows 2000
- Cross-site issues

For more information on the architectural changes due to consolidation, see Planning Chapter 3 and 4.

Is Consolidation for Me?

If you are still undecided as to whether consolidation is a good idea in your circumstances, approach the question by a process of elimination.

Consolidation is not for you if:

- You only have one Exchange 5.5 server in total (for example, SLA, SLO, MBO and SBO environments).
- You have a maximum of one Exchange 5.5 server in each of your sites.
- You have no plans to migrate to Windows 2000
- You do not want to implement Active Directory
- You have third-party connectors that are not supported under Windows 2000 (although this is only a partial objection—all it means is that you will still need at least one Exchange 5.5 server)
- The risks associated with consolidation outweigh the benefits.

Still unsure? At this point, it is probably worth doing a feasibility study and a risk analysis. Here are a couple of examples where consolidation would benefit the respective organizations.

LIC Example

Fabrikam, Inc. is a Large International Conglomerate which converted to Exchange 5.5 in 1998 following an extensive evaluation and pilot program. The company has 50,000 employees distributed throughout the world, 3,500 of whom work at GHQ with several RBOs of up to 2,000 employees. In addition, GHQ and each RBO supports a network of LBOs,

MBOs and SBOs.

Early on in the Exchange 5.5 migration project, XYZ accepted the recommendation from their IT consultancy firm to host a maximum of 500 users per Exchange 5.5 server. This means that there are twenty-five locations with two or more Exchange 5.5 servers and GHQ has a total of seven servers.

Fabrikam, Inc. will consider consolidating all sites with two or more Exchange 5.5 servers on the same LAN to one Exchange 2000 server up to a maximum of 2000 users per server. This will mean that the seven machines in GHQ will be replaced with two Exchange 2000 servers.

SLO Example

Hanson Brothers is a call center operation employing 2,500 staff working a 24-hour, three shift system. Exchange 5.5 workflow automation is used to ensure that orders are correctly processed and routed according to defined business rules. Currently, each shift is hosted on a separate Exchange 5.5 server, which allows maintenance routines to be run while during each shift’s night-time. However, for this to work efficiently, each user needs to be transferred from server to server depending on their shift. This is currently carried out as an automated routine using batch files that move the users according to their shift patterns. However, this moving of users’ mailboxes needs to be carefully timed so as not to interfere with the shift that is currently working.

Consolidation would allow the company to run its entire operation from one Exchange 2000 server, but with separate storage groups and mailbox stores for each shift. This would make a considerable reduction in complexity, network traffic, and would allow faster moving of employees from shift to shift.

EXCHANGE 2000
IMPLEMENTATION PLAN

Consolidation and Migration

In many ways, consolidation is really a sub-set of the migration process. It is less complex in that it does not usually require any redesign of your Exchange architecture. For the remainder of this guide, migration and consolidation will be considered jointly.

The complete Exchange 2000 implementation plan can be divided into the following sections, as shown in Job Aid 2.

- Vision/Scope Phase
- Planning Phase
- Development Phase
- Proof of Concept Phase
- Pilot Phase
- Deployment Phase
- Post Implementation Review Phase

This part of the guide discusses the Development Phase section.

Creating a Methodology

Creating a methodology for your migration or consolidation project is essential for ensuring a successful outcome. A good methodology will help you to consider all the factors before undertaking any changes that will affect your network.

The section above gives headings that are part of the Microsoft Solutions Framework methodology. This is an extremely effective way of analyzing any IT project and lends itself to a migration project such as this.

For more information on what MSF is and how to apply it to this project, see the MSF Datasheet:

http://www.microsoft.com/trainingandservices/content/downloads/datasheets/MSFDatasheet.doc

Job Aid 2 is a Microsoft Project template (.MPT) file that also follows the MSF methodology and that you can adapt to fit your migration plan.

Resource Requirements

A migration project will require significant resources, which are detailed in Deployment Chapter 1, “Overview of the Deployment Process”. A consolidation project usually requires fewer resources than a full-scale rollout, as you can truncate the planning process will probably not be

SUMMARY

upgrading the client at the same time.

Having read this chapter, you should be able to decide as to whether a migration or consolidation project is suitable for your organization. You should now be aware of some of the factors that you need to consider and the methodology that will enable you to produce an effective migration plan. You can now move on to carry out the detailed architectural appreciation and planning in the remaining chapters.